IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended) A motor having a controller for generating rotational torque due to a predetermined magnetic flux distribution formed by controlling supplied current to coils, said ~~motor~~ controller comprising:

coil on/off switching means for performing switching operations between an on-state ~~wherein~~ in which current is supplied to said coils, and ~~either~~ a first off-state ~~wherein~~ in which the coil terminals are open-circuited ~~or~~ when a high-level control signal is received, and between said on-state in which said current is supplied to said coils, and a second off-state ~~wherein~~ in which the coil terminals are short-circuited when a low-level control signal is received; and

coil current control means for controlling a switching operation of said coil on/off switching means according to commands input to said motor.

Claim 2 (Original) A motor according to Claim 1, wherein said coil on/off switching means comprises a first transistor switch set for connecting said coil terminals to the power supply voltage, and a second transistor switch set for connecting said coil terminals to the ground.

Claim 3 (Original) A motor according to Claim 2, wherein said coil current control means controls switching between the on-period and off-period of said first and second transistor switch sets with PWM (Pulse Width Modulation) method.

Claim 4 (Original) A motor according to Claim 1, wherein said coil current control means controls said motor to have the viscosity resistance by adjusting the ratio of said first

off-state as to said second off-state, during a period wherein no current is supplied to said coils.

Claim 5 (Original) A motor according to Claim 4, wherein said coil current control means controls the ratio of said first off-state as to said second off-state, during a period wherein no current is supplied to said coils, with PWM (Pulse Width Modulation) method.

Claim 6 (Original) A motor according to Claim 4, wherein said coil current control means increases the ratio of said first off-state as to the off-state of said coil in order to increase the mechanical compliance of said motor.

Claim 7 (Original) A motor according to Claim 4, wherein said coil current control means increases the ratio of said second off-state as to the off-state of said coil in order to increase the viscosity resistance of said motor.

Claim 8 (Withdrawn) A servo controller for an actuator including a positioning control system having a series compensation proportional gain, and a phase compensation element, said servo controller comprising:

phase compensation band setting means for freely adjusting the frequency band for performing phase compensation by said phase compensation element.

Claim 9 (Withdrawn) A servo controller for an actuator according to Claim 8, further comprising means for setting desired phase lead or phase lag.

Claim 10 (Withdrawn) A servo controller for an actuator according to Claim 8, wherein in the event that positioning precision is required, phase compensation is performed over the entire band.

Claim 11 (Withdrawn) A servo controller for an actuator according to Claim 8, wherein in the event that high-speed movement is required, phase compensation is performed for a high-frequency band.

Claim 12 (Withdrawn) A servo controller for an actuator according to Claim 8, further comprising series compensation proportional gain setting means for freely adjusting the magnitude of said proportional gain.

Claim 13 (Withdrawn) A servo controller for an actuator including a positioning control system having a series compensation proportional gain, and a phase compensation element, said servo controller comprising:

phase compensation amount setting means for freely adjusting the amount of phase compensation performed by said phase compensation element.

Claim 14 (Withdrawn) A servo controller for an actuator according to Claim 13, further comprising means for setting desired phase lead or phase lag.

Claim 15 (Withdrawn) A servo controller for an actuator including a positioning control system having a series compensation proportional gain, and a phase compensation element, said servo controller comprising:

series compensation proportional gain setting means for freely adjusting the magnitude of said series compensation proportional gain.

Claim 16 (Withdrawn) A servo controller for an actuator according to Claim 15, further comprising viscosity coefficient setting means for controlling the viscosity resistance of said actuator.

Claim 17 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the neck portion of an ambulatory mobile robot;

and wherein said series compensation proportional gain is set to a great value;

and wherein the amount of phase lead is set to a small value within a range wherein deterioration in the stability obtained does not occur due to an increase of said proportional gain;

and wherein the viscosity coefficient of said joints is set to a great value.

Claim 18 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the shoulder and elbow portions of an ambulatory mobile robot;

and wherein in the event that movement with mechanical compliance is required, the viscosity coefficient of said joints is set to a small value, said proportional gain is set to a small value, the frequency band for performing phase lead compensation is set to a great value, and the amount of phase lead is set to a great value.

Claim 19 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the shoulder and elbow portions of an ambulatory mobile robot;

and wherein in the event that said robot performs loading movement with force greater than the loading torque, said proportional gain is set to a great value, and the viscosity coefficient of said joints is set to a great value;

and wherein in the event that said robot performs movement with constant force following the loading torque, said proportional gain is set to a small value, and the viscosity coefficient of said joints is set to a small value, corresponding to said loading torque, so as to increase the mechanical compliance.

Claim 20 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the trunk portion of an ambulatory mobile robot;

and wherein the viscosity coefficient of said joints is set to a great value so as to improve robustness against vibration and external influence occurring due to the movement of said robot;

and wherein said proportional gain is set to a great value in order to improve positioning precision with a high priority;

and wherein the amount of phase lead is set to a small value within a range wherein deterioration in the stability obtained does not occur due to an increase of said proportional gain while maintaining the speed of the movement.

Claim 21 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the crotch-joint portion of an ambulatory mobile robot;

and wherein the viscosity coefficient of said joints is set to a great value so as to improve robustness against vibration and external influence occurring due to the movement of said robot;

and wherein said proportional gain is set to a great value in order to improve positioning precision with a high priority;

and wherein the amount of phase lead is set to a small value within a range wherein deterioration in the stability obtained does not occur due to an increase of said proportional gain while maintaining the speed of the movement.

Claim 22 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the knee portion of an ambulatory mobile robot;

and wherein at the time of the leg of the robot being off the ground, or at the point of the leg touching the ground, the viscosity coefficient of said joints is set to a small value, said proportional gain is set to a small value, the frequency band for performing phase compensation is set to a great value, and the amount of phase lead is set to a great value.

Claim 23 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the knee portion of an ambulatory mobile robot;

and wherein at the time of the leg of the robot supporting the body of said robot, the viscosity coefficient of said joints is set to a great value so as to improve robustness against

vibration and external influence occurring due to the movement of said robot, said proportional gain is set to a great value in order to improve positioning precision with a high priority, and the amount of phase lead is set to a small value within a range wherein deterioration in the stability obtained does not occur due to an increase of said proportional gain while maintaining the speed of the movement.

Claim 24 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the ankle portion of an ambulatory mobile robot;

and wherein at the time of the leg of the robot being off of the ground, or the at the point of the leg touching the ground, the viscosity coefficient of said joints is set to a small value, said proportional gain is set to a small value, the frequency band for performing phase compensation is set to a great value, and the amount of phase lead is set to a great value.

Claim 25 (Withdrawn) A servo controller for an actuator according to Claim 16, wherein said actuator is employed for joints in the ankle portion of an ambulatory mobile robot;

and wherein at the time of the leg of the robot supporting the body of said robot, the viscosity coefficient of said joints is set to a great value, said proportional gain is set to a great value, and the amount of phase lead is set to a small value within a range wherein deterioration in the stability does not occur.

Claim 26 (Currently Amended) A method for generating rotational torque with a motor due to a predetermined magnetic flux distribution formed by controlling a supplied current to coils, said method comprising:

performing a first switching ~~operations~~ operation of a coil on/off switching unit

between an on-state in which current is supplied to said coils, and ~~either (i)~~ a first off-state

~~wherein~~ in which the coil terminals are open-circuited ~~or (ii) a second off-state wherein the~~

~~coil terminals are short-circuited~~ when a high-level control signal is received;

performing a second switching operation of said coil on/off switching unit between

said on-state in which said current is supplied to said coils, and a second off-state in which

the coil terminals are short-circuted when a low-level control signal is received; and

controlling a switching operation of a coil current control unit of said coil on/off

switching unit according to commands input to said motor.

Claim 27 (Previously Presented) The method according to Claim 26, further

comprising:

connecting said coil terminals to a power supply voltage by a first transistor switch set

of said coil on/off switching unit; and

connecting said coil terminals to ground by a second transistor switch set.

Claim 28 (Previously Presented) The method according to Claim 27, further

comprising:

controlling with said coil current control unit a switching between the on-period and

off-period of said first and second transistor switch sets with a PWM (Pulse Width

Modulation) method.

Claim 29 (Previously Presented) The method according to Claim 26, further comprising:

controlling said motor with said coil current control unit to have a viscosity resistance by adjusting a ratio of said first off-state as to said second off-state, during a period in which no current is supplied to said coils.

Claim 30 (Previously Presented) The method according to Claim 29, further comprising:

controlling with said coil current control unit the ratio of said first off-state as to said second off-state, during a period in which no current is supplied to said coils, with a PWM (Pulse Width Modulation) method.

Claim 31 (New) The method according to Claim 29, further comprising:

increasing with said coil current control unit a ratio of said first off-state as to the off-state of said coil in order to increase a mechanical compliance of said motor.

Claim 32 (New) The method according to Claim 29, further comprising:

increasing with said coil current control unit a ratio of said second off-state as to the off-state of said coil in order to increase the viscosity resistance of said motor.